Remarks

Claims 1-31 are pending. Claims 11-19, 21-27, 30 and 31 are withdrawn. Claims 1-10, 20, 28 and 29 are rejected. Claim 6 is currently amended. Support for the amendments to the Specification and Claim 6 can be found at, for example, paragraphs [0037]-[0074] and [0117]-[0130] of the published US patent application. The Applicants believe the amendments place the claims in condition for allowance or, alternatively, in better condition for appeal and respectfully request entry of the amendments.

The Applicants thank the Examiner for entering the previous amendments to the claims and have indicated the status of Claims 11-19, 21-27 and 30-31 in the amendments.

Claim 6 is rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement because "the definition of j as a position is new matter." The Applicants have amended Claim 6 consistent with the Examiner's guidance. Amended Claim 6 now recites a "numerical matrix A of dimensions NxM in which N designates a number of sequences and M designates a number of motifs of one sequence of said alignment, with value A_{ij} being equal to a first value A1 when the motif of position i of sequence j with a value ranging from 0 to N is mutated in relation to a motif of position i of the reference sequence and equal to a second value A2 in the other cases" and "wherein in the matrices i and k designate positions and j designates a sequence." The effect of these amendment is that "j" is no longer defined as a position and is instead defined as a sequence. The Applicants respectfully request withdrawal of the rejection of amended Claim 6 under 35 USC §112, first paragraph as the amended claim now complies with the written description requirement of 35 USC §112, first paragraph.

Claims 1-10, 20, 28 and 29 are rejected under 35 USC §112, first paragraph, as being non-enabled. The rejection analyzes a number of factors and concludes that the Specification lacks clear evidence of methodology for identifying at least two sequences in which a mutation has occurred "simultaneously." The rejection also states that one of ordinary skill in the art would turn to trial and error experimentation to determine a relationship that can be employed to elucidate markers or identifiers that indicate a mutation in a specific motif has occurred simultaneously in two different sequences. The rejection then states that such experimentation would be undue.

Claims 1-10, 20, 28 and 29 are enabled under 35 USC §112, first paragraph. First, the Applicants wish to clarify that the term "simultaneously" is used in the context of the Specification

and working examples to refer to motifs or positions in a particular matrix which, in the context of that matrix, appeared to change at the same time or appeared not to change. The term "simultaneously" is not intended to refer to the identification of motifs or positions in different sequences that change or mutate at a particular, specific time in the past (*e.g.* 10,000 B.C.). Thus, in the context of the application, the terms "simultaneously" or "the same time" do not refer to the timing of mutations in terms of chronological, geological or evolutionary time, but instead refer to whether such mutations are seen in the context of a particular matrix to occur together.

However, the Applicants also provide evidence that Claims 1-10, 20, 28 and 29 are enabled under 35 USC §112, first paragraph. In that regard, the Applicants enclose a Declaration of Sophie Brouillet who is known in the field of bioinformatics. Ms. Brouillet believes that one of ordinary skill in the art would be enabled under 35 USC §112, first paragraph, to make and use the claimed methods without undue experimentation given the description in the application. Specifically, Ms. Brouillet believes the steps for performing the claimed methods and the rules for constructing the various individual matrices used in these methods are readily apparent to one of ordinary skill in the art from an inspection of the data values in the various matrices shown in working example paragraphs [0117] and [0130] of the application. The Applicants respectfully request withdrawal of the rejection of Claims 1-10, 20, 28 and 29 as being non-enabled under 35 USC §112, first paragraph.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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